ANNUAL REPORT OF THE CENTRAL METEOROLOGICAL OBSERVATORY OF JAPAN

FOR

THE YEAR 1901.

PART II.

ON

THE BAROMETRIC DEPRESSIONS

IN

THE YEAR 1901.

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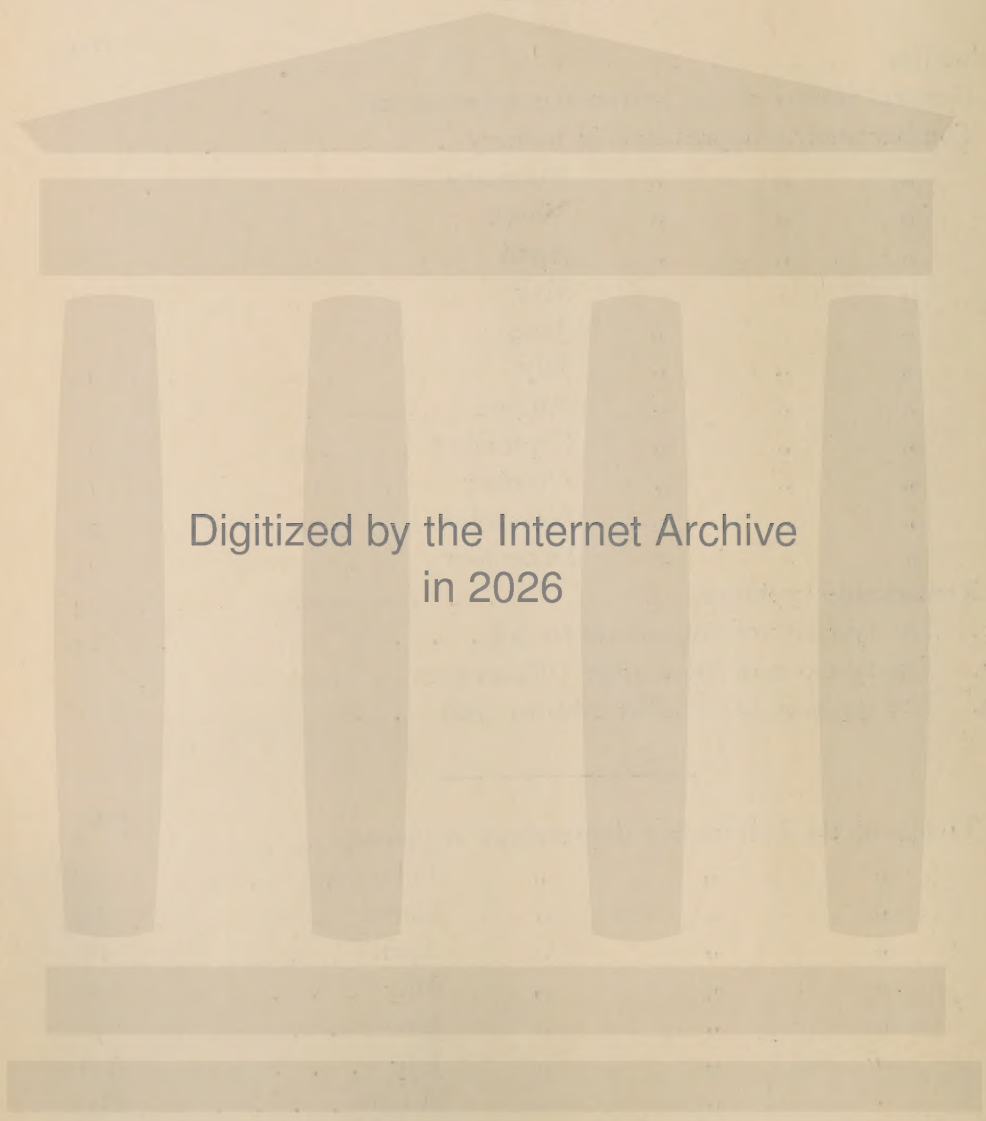

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ON THE BAROMETRIC DEPRESSIONS

IN

THE YEAR 1901.

INTRODUTION.

The present report contains the result of investigations of typhoons, cyclones, and secondary barometric depressions that passed over Japan and the neighbouring seas during the year 1901.

The documents used for the preparation of this report are the manuscripts of tridaily weather charts of this observatory, and the storm records sent from the provincial meteorologcial stations and naval semaphores. The meteorological logs taken on board the imperial naval vessels, merchant marines, and foreign vessels have also been used, in so far as they are available. The bulletins published by the Zikawei meteorological and magnetic observatory, the China coast meteorological reports published by the Hongkong observatory, and the meteorological returns from the imperial Korean customs, have been consulted.

The present volume consists of two parts: the first part contains a general review of the barometric depressions in each month, and the second part, detailed descriptions of more important storms. In the general review of depressions, their origins, motions, and lowest barometric readings are concisely stated. But in cases in which the depressions caused unusual phenomena, such as severe storms, heavy rainfalls, strong gales, etc., more lengthy descriptions are given; and in the description of more important cyclonic storms, brief statements of their appearances, passages, and the state of the weather are given. Damages caused by storms and inundations attending to the atmospheric perturbations are also stated as far as possible. The tracks of all the barometric depressions described in the text are fully exhibited on the charts at the end of the volume, and those of severe typhoons are given in thick lines. Each of the small circles in the track indicates the position of the centre of depression at the time specified by the figures printed near it. The figures near the circle denote the date, and the alphabet the time. "a" stands for 6 a.m. "b" for 2 p.m. and "c" for 10 p.m. The figures within the circle denote the depth of the centre, but for the sake of shortness the first figure 7 of the barometric height is avoided.

I. GENERAL REVIEW OF THE BAROMETRIC DEPRESSIONS.

January.—

I. *Continental depression of the 3rd to the 6th.*—developed in the south of Chonking situated at the upper part of Yangtsekiang on the 1st and made its way towards the ENE, reaching the vicinity of Quelpart island on the 3rd. It then passed the strait of Iki on the 4th, and moving northeastwards entered Japan Sea, in the northern part of which it disappeared finally on the sixth. L. B. 752 mm.

II. *Depression of the 4th to the 5th.*—appeared in the south of the Yayeyama Islands on the morning of the 4th, and, then passing over Eastern Sea of China it made its way northeastwards along the Pacific coast. L. B. 750 mm.

III. *Depression of the 7th.*—appeared southwest of Hachijojima on the morning of the 7th and passed away towards the northeast. L. B. 755 mm.

IV. *Continental depression of the 10th to the 11th.*—came from Siberia, appearing in the northern part of Japan Sea on the morning of the 10th. Moving northeastwards, it passed over the neighbourhood of Cape Soya and entered Okhotsk Sea on the morning of the 11th. L. B. 752 mm.

V. *Depression of the 13th to the 14th.*—appeared at sea southwest of the Yayeyama Islands on the 13th, and moving northeastwards, the depression passed over south of Hachijojima. L. B. 760 mm.

VI. *Depression of the 16th to the 17th.*—appeared in the Eastern Sea of China on the 16th and then passed the western part of Japan moving eastwards. On the morning of the 17th the depression entered the Pacific through Kii channel, and moving in the southeast direction, it passed between Miyake-jima and Hachijojima on the afternoon of the 17th. L. B. 757 mm.

VII. *Depression of the 20th to the 22nd.*—developed at sea southwest of Formosa on the 20th and reached the islands of Goto on the night of the same day. Then entering Japan Sea, it moved along the coast; but when reached northeastern Japan the depression crossed the region and entered the Pacific on the 22nd. L. B. 750 mm.

VIII. *Depression of the 21st.*—appeared at sea south of Shikoku (Lat. 30° N) and moved northeastwards. L. B. 755 mm.

IX. *Depressions of the 23rd to the 25th.*—appeared east of Formosa on the early morning of the 23rd, and moving northeastwards it passed into the Pacific. L. B. 760 mm.

X. *Depression of the 24th.*—appeared in the southern part of Saghalien on the morning of the 24th and then moved southeastward, passing over the southern part of the Kuriles into the Pacific. L. B. 755 mm.

XI. *Depression of the 26th to the 27th.*—appeared in the southern part of Japan Sea on the early morning of the 26th, and moving towards the northeast, it crossed the southern part of Hokkaido, and reached Nemuro on the morning of the 27th. The origin of this depression could not be located. L. B. 756 mm.

XII. *Depression of the 28th to the 30th.*—developed at sea south of Formosa on the 28th and entered the Pacific passing between Amamiōshima and Satamisaki. Then moving eastwards along the Pacific coast it passed the neighbourhood of Hachijojima. L. B. 757 mm.

February.—

I. *Secondary depression of the 1st to the 2nd.*—developed at sea off Hamada about 2 p. m. of the 1st and moving northeastwards it came to the sea north of Sado at 10 p. m. on the same day. On the early morning of the 2nd the depression passed the neighbourhood of Oga peninsula, and entered the Pacific, passing south of Nemuro at 10 p.m. During the passage of this depression a heavy snow storm occurred in Hokkaido. L. B. 750 mm.

II. *Secondary depression of the 3rd.*—appeared at sea off Noto peninsula on the early morning of the 3rd, and making its way towards the northeast it disappeared near Oga peninsula. L. B. 751 mm.

III. *Depression of the 7th to the 9th.*—The origin of the depression was not known, but it appeared at sea west of the Bonin islands on the 6th and proceeded towards the northeast. On the early morning of the 7th it approached Hachijo island and about 2 p. m. passed the sea off Choshi and on the night of the same day off Kinkazan. On the 8th the depression was located at sea off the southeastern coast of Hokkaido and on the 9th passed to the south of the Kuriles.

When this depression was first located off the southeastern coast of Honshū, it was shallow and did not cause any storm, except a cloudy and somewhat windy weather in Hachijojima. But when it reached the neighbourhood of Chōshi on the same day it rapidly developed and caused a storm on the southeastern coast. At the same time there was present at sea off northeastern Japan a high pressure that came from Manchuria. Consequently the barometric gradient over Honshū was so extraordinarily great that there prevailed a violent wind, especially in the western part of

Japan. As soon as the depression approached Hokkaido it caused there a tremendous snow-storm. We give below an extract of the meteorological observations made at the Chōshi and Nemuro meteorological stations :—

Chōshi.

Date	Hour	Barometer	Temperature	Wind direct.	Wind vel.	Weather
7th	10 a.m.	752.0 mm.	9°3 C	N	5.5 m.p.s.	rainy
„	11	751.0	8.4	W	4.7	„
„	Noon	749.4	8.3	W	5.5	cloudy
„	1 p.m.	749.5	4.7	WNW	11.9	„
„	2	748.8	3.8	NW	6.1	fair
„	3	749.6	5.0	W	11.3	cloudy
„	4	749.9	4.8	NW	6.5	„
„	6	750.4	4.6	WNW	7.1	rainy
„	8	750.7	3.3	SW	8.2	clear
„	10	751.3	4.3	WSW	2.2	„
„	M.N.	752.2	3.7	WNW	18.6	fair
8th	2 a.m.	754.2	3.0	WNW	18.6	clear
„	4	755.5	2.8	WNW	16.5	„
„	6	757.1	1.9	W	13.0	„
„	8	758.1	2.7	WNW	12.9	„

Nemuro.

Date	Hour	Barometer	Temperature	Wind direct.	Wind vel.	Weather
8th	5 p.m.	742.9 mm.	−2.4 C	NNW	28.4 m.p.s.	snow
„	6	742.8	−3.8	N	28.0	„
„	7	743.0	−4.1	NNW	27.5	„
„	8	742.9	−5 0	NNW	28.8	„
„	9	743.0	−8.2	NNW	26.2	„
„	10	743.0	−8.4	NW	26.3	„
„	11	741.3	−8.3	NNW	30.0	„
„	M.N.	741.4	−8.3	NNW	30 4	„
9th	1 a.m.	741.2	−7.9	NNW	32.1	„
„	2	741.2	−7.8	NNW	30.6	„
„	3	740.7	−7.2	NNW	29.2	„
„	4	741.1	−6.6	NNW	27.7	„
„	5	741.3	−5.7	NNW	21.7	cloudy
„	6	742.1	−5.6	NNW	17.7	„

,,	7	742.3	−6.2	NNW	17.7	fair
,,	8	742.6	−5.7	NNW	18.6	clear
,,	9	743.1	−6.1	NNW	20.5	,,
,,	10	743.4	−6.3	NNW	23.2	fair

The reports of the Tokachi and Abashiri meteorological stations in Hokkaido as regards the present storm are given in the following lines:—

Tokachi.—From the 8th to 10th there was observed such a remarkable storm that had never been observed since the establishment of this station. A violent wind blew constantly during 41 hours and a heavy snow fall occurred. At the station the following records were obtained:—Since the 4th of this month the barometer went up higher until it reached 769 mm. (reduced to the normal gravity and sea level). The weather was calm and clear then, but the barometer began to fall and the weather became cloudy in the afternoon. At 2 a.m. of the 7th the weather began to be stormy and at 6 a.m. the barometer fell rapidly. The wind direction at 10 p.m. was NW and the force was strong; but at midnight the direction changed to the north and the velocity increased rapidly. At 5 a.m. of the 8th the wind became gale and at 9:20 a.m. the snowfall ceased. From 10 a.m. the wind direction changed to the northwest and the velocity decreased; but again it began to snow at 2:30 p.m. and the weather became quite stormy at 4:10 p.m. In the evening the barometer descended very rapidly and the velocity of the wind increased. On the 9th, at 5 a.m., the barometer showed 748.1 mm. which was the lowest, and the wind became so intense that the velocity reached 22.1 m.p.s. at a.m. on the 10th. After 1 p.m., however, the storm began to decline and the weather cleared up so that the setting sun could be seen. The greatest wind velocity observed here during the passage of this depression was smaller than the greatest wind velocity observed at this meteorological station since its establishment (which was 24.4 m.p.s. with the WNW direction, observed at 8 a.m. of November 24, 1900.); but such a long duration of the gale as 41 hours had never been observed before.

Abashiri.—On the early morning of the 6th the barometer showed such a high mark as 768 mm. and the energy of the wind was weak. On the next day about at 6 a.m. the barometer was 765.8 mm. and there was slight snowfalls occasionally, the temperature being −5°C to −4°C. At 9 a.m. the storm warning for the districts 1−7 was sent from the Central Meteorological Observatory. At 10 p.m. the direction of the wind was NE, and its energy became strong. At 2 a.m. on the 8th the direction

changed to the north and the energy increased showly, and then there occurred a severe snow storm. At 10 a.m. the barometer was 752 mm. and was stationary for some time ; but after 7 p.m. it began to descend and the wind to be violent. On the next day the barometer showed 748 mm. at 6 a.m., and went up a little higher at 3 p.m., the wind decreasing its energy. About at 11 p.m. the weather became calm. The snowfall that accompanied this depression was enormous ; but as the wind was violent, the amount of the snowfall could not be measured. It was, however, generally estimated to be 3 feet or more in the town, which was a rare case.

IV. *Depression of the 8th to the 11th.*—developed in the southern part of Formosa at 2 p.m. of the 8th and then making its way northeastwards it crossed the Eastern Sea of China. At the noon time of the 9th the depression entered Japan Sea, passing through Tsushima strait, and it was located in the south of Okujiri island in Hokkaido on the night of the 10th. It finally disappeared somewhere between Asahigawa and Obihiro at 2 p.m. on the 11th. L. B. 753 mm.

V. *Secondary depression of the 11th to the 12th.*—appeared to have developed in the bay of Wakasa on the early morning of the 11th; but it was not certain. This depression moved northeastwards, appearing in the neighbourhood of Otaru on the afternoon of the 12th, and entered Okhotsk Sea passing through the northern part of Hokkaido on the 13th.

L. B. 738 mm.

VI. *Depression of the 11th to the 12th.*—appeared in the neighbourhood of Hachijojima on the early morning of the 11th, and passed the sea off Kinkazan on the morning of the 12th. In the afternoon the depression passed to the southern part of the Kuriles. The intensity of this depression was very weak in the beginning, but it considerably developed as it went up to higher latitudes, causing a violent storm in Nemuro.

L. B. 743 mm.

VII. *Secondary depression of the 12th to the 13th.*—appeared to have originated over the Sapporo plateau on the 12th at 2 p.m., and moving northeastwards it passed into the Okhotsk Sea. L. B. 737 mm.

VIII. *Continental depression of the 13th to the 15th.*—came from the district northeast of Vladivostock on the 13th. Crossing Japan sea it approached the sea south of Rijiri island on the early morning of the 14th. Then the depression crossed the northern part of Hokkaido and entered the Okhotsk sea. Early on the morning of the 15th it disappeared towards the southern part of the Kuriles. L. B. 738 mm.

IX. *Secondary depression of the 16th to the 17th.*—was located at sea northeast of Iki on the night of the 16th. Making its way towards the northeast it disappeared somewhere off Noto peninsula on the afternoon of the 17th. L. B. 754 mm.

X. *Depression of the 17th.*—appeared at sea southwest of Hachijōjima on the early morning of the 17th. Making its way northeastwards it passed the sea off Chōshi in the evening. L. B. 754 mm.

XI. *Secondary depression of the 19th to the 20th.*—developed in the southern part of Japan sea early on the morning of the 19th. Crossing northeastern Japan it passed away into the Pacific. L. B. 755 mm.

XII. *Secondary depression of the 20th.*—appeared in the provinces of Kai and Musashi. It moved towards ESE and at 2 p.m. approached Tokyo, finally making its way towards Chōshi. L. B. 755 mm.

XIII. *Continental depression of the 20th to the 21st.*—appeared in the upper Yangtsekiang valley, and on the afternoon of the 19th made its way eastwards. On the morning of the 20th the depression after passing south of Shanghai entered the Eastern China Sea. It appeared somewhere between Amamioshima and Tanegashima in the afternoon, and in the south of Kii early on the morning of the 31st, then making its way towards the sea off Chōshi. L. B. 753 mm.

XIV. *Depression of the 24th to the 26th.*—was located in the Eastern Sea on the afternoon of the 24th and moving northeastwards entered the Pacific. Then it began to make its way along the Pacific coast at 2 p.m. of the 25th, and passed east of Kinkazan at 10 p.m., reaching the sea off Nemuro on the afternoon of the 26th. L. B. 747 mm.

XV. *Continental depression of the 24th to the 25th.*—came from Mongolia, passing through Manchuria and North Korea. On the forenoon of the 24th it came as far as the sea southwest of Vladivostock and moving northeastwards the depression crossed Japan Sea. On the evening of the 25th it entered Okhotsk Sea. L. B. 752 mm.

XVI. *Continental depression of the 27th to the 28th.*—developed in the northwest of Chonking. At first it made its way eastwards between the Yellow River and Yangtsekiang, and then on the evening of the 26th, passed north of Ichang. On the 27th the depression entered the Yellow Sea and then crossing the southern part of Korea entered Japan Sea. On the afternoon of the 28th it appeared at sea west of Hokkaido and finally passed away into the Okhotsk Sea. L. B. 757 mm.

March.—

I. *Depression of the 2nd to the 3rd.*—appeared between Wonsan and Vladivostock on the morning of the 2nd. Making its way towards the southeast and crossing the Japan Sea the depression disappeared at the neighbouring sea of Sado on the afternoon of the 3rd. L. B. 754 mm.

II. *Secondary depression of the 3rd.*—appeared at the foot of Mt. Fuji at 2 p.m. of the 3rd, and then passing over Cape Daitosaki in the province of Kazusa it entered the Pacific ocean at 10 p.m. L. B. 753 mm.

III. *Continental depression of the 6th to the 7th.*—developed in the upper Yangtsekiang valley and then passed the region extending between Chonking and Ichang on the 5th. It entered the Eastern Sea early on the morning of the 6th and travelled the neighbourhood of the island of Goto at 2 p.m. Later the depression crossed Kiūshū and passed Cape Ashizuri on the same evening. At 2 p.m. of the 7th it was located between Hachijojima and Miyakejima, and finally passed away into the Pacific. L. B. 756 mm.

IV. *Secondary depression of the 7th.*—appeared in the south of Iida in the upper valley of the Tenriū river at 2 p.m. of the 7th and moved southeastwards, finally entering Enshūnada. L. B. 757 mm.

V. *Continental depression of the 9th to the 10th.*—came from Siberia and was located in the north Japan sea early in the forenoon of the 9th. It moved eastwards and crossed the northern portion of Hokkaido, passing into the Pacific Ocean early on the 10th. L. B. 754 mm.

VI. *Continental depression of the 9th to the 11th.*—appeared in the upper Yangtsekiang valley, came between Chonking and Ichang on the 8th, and after passing north of Ichang on the 9th, it made its way rapidly eastwards, reaching the sea south west of the islands of Goto at 10 p.m. of the same day. Later moving northeastwards it crossed the central part of Kiūshū and passad over Shikoku, Kinai, and Tokaido. Early on the morning of of the 11th the depression travelled north of Chōshi harbour and then entered Kashimanada. The intensity of this depression was slight; but as it travelled eastwards it increased considerably, and caused a storm in the eastern Japan. The following table gives the results of the observations made at the Chōshi meteorological station:—

Date	Hour	Barometer	Temperature	Wind direct.	Wind vel.	Weather
10th	6 p.m.	758.0 mm.	11.°6 C	ENE	8.8 m.p.s.	cloudy
,,	8	756.9	11.6	E	6.7	,,

,,	10	754.4	11.3	SE	0.6	,,
,,	M.N.	752.8	11.3	NW	3.7	rainy
11th	2 a.m.	749.7	12.5	S	10.9	,,
,,	4	746.3	13.5	S	16.8	,,
,,	5	744.1	13.5	S	23.3	,,
,,	6	743.4	14.4	S	24.1	,,
,,	8	745.6	8.0	N	20.6	cloudy
,,	10	748.5	8.3	N	12.5	rainy
,,	Noon	749.7	9.4	N	10.3	fair
,,	2 p.m.	750.7	9.8	N	6.5	cloudy
,,	4	752.6	8.8	NE	5.7	rainy

L. B. 743 mm.

VII. *Depression of the 12th to the 13th.*—appeared in the southern part of the Japan Sea early on the morning of the 12th and then travelled northeastwards. In the evening of the same day it reached the sea southwest of Hokkaido and later crossing the island of Hokkaido it passed away into the Okhotsk Sea on the afternoon of the 13th. L. B. 742 mm.

VIII. *Continental depression of the 14th to the 16th.*—developed in the northwest of Chonking and travelled northeastward on the 13th. On the next day the depression passed north of the Shantung peninsula and entered the Yellow Sea. Later crossing Korea it entered the Japan sea and then it passed into the Pacific through Tsugaru Strait on the evening of the 15th. Early on the morning of the 16th the depression was seen in the south of Nemuro. L. B. 754 mm.

IX. *Depression of the 14th to the 16th.*—developed at sea off the southwestern part of Formosa and then crossing the island entered the Eastern Sea. This depression travelled northeastwards along the archipelago of Riūkiū and on the afternoon of the 15th it passsd through between Amamioshima and Tanegashima. It was found in the neighbouring sea of Hachijojima on the afternoon of the 16th. L. B. 755 mm.

X. *Continental depression of the 19th to the 21st.*—developed in the neighbourhood of Tomsk on the 13th and travelling southeastwards it passed Irkutsk on the morning of the 17th. On the 19th the depression passed Shinminton travelling towards the northeast, and after it crossed Karafuto, on the 21st, it entered the Okhotsk Sea. L. B. 764 mm.

XI. *Depression of the 22nd to the 24th.*—appeared on the sea off the southwestern part of Formosa early on the morning of the 22nd, and travelling northeast-

wards it passed through the Eastern Sea and entered the Pacific. On the afternoon of the 24th it was seen on the sea off Bōshū. L. B. 754 mm.

XII. *Secondary depression of the 26th.*—appeared in the neighbourhood of Mayebashi at 2 p.m. of the 26th. Taking its course southeastwards, it passed away into the sea off Bōshū. L. B. 759 mm.

XIII. *Depression of the 27th to the 30th.*—developed on the sea off the southern extremity of Formosa and made its way towards the northeast. On the 28th it appeared in the Eastern Sea and on the 29th it passed off the Pacific coast, arriving at Hachijojima at the dawn of the 30th. L. B. 756 mm.

XIV. *Secondary depression of the 29th.*—appeared in the neighbourhood of Nagano at 2 p.m. of the 29th, and travelling towards the southeast it passed into Sagaminada at 10 p.m. L. B. 759 mm.

XV. *Continental depression of the 28th to the 29th.*—passed Irkutsk on the 25th and then made its way towards ESE. On the 28th it came to the northern part of the Japan Sea and then crossing Hokkaido entered the Pacific. L. B. 757 mm.

April.--

I. *Continental depression of the 3rd to the 4th.*—appeared in the northwest of Irkutsk and made its way towards the southeast. On the second it was found in the north of the gulf of Pechili, on the third it entered the Japan Sea by crossing North Korea, and on the fourth it passed away towards Karafuto. L. B. 754 mm.

II. *Depression of the 8th to the 11th.*—developed on the sea off the southwestern part of Formosa and proceeded northeastwards on the 8th. By crossing Formosa and the Eastern Sea it came to the Pacific Ocean. Early on the morning of the 11th the depression travelled along the Pacific coast, causing a storm. L. B. 750 mm.

III. *Continental depression of the 10th to the 11th.*—travelled from Siberia to the Japan Sea on the 10th, and by crossing the northern part of Hokkaido entered the Pacific. L. B. 753 mm.

IV. *Continental depression of the 14th to the 16th.*—appeared somewhere between Chonking and Ichang. There it remained stationary until the 13th when began to move towards ENE. At 4 p.m. of the 14th the depression passed south of Kiukiang and in the evening entered the Eastern Sea by passing south of Shanghai. On the 15th it reached the Korean Strait. At the same

time an anticyclone appeared in Manchuria and moving southeastwards passed Shikoku. On the 16th it appeared at sea off Kii, and at 2 p.m. on the same day passed Hachijojima, and at 10 p.m. in the east of Chōshi harbor. L. B. 750 mm.

V. *Continental depression of the 19th to the 20th.*—developed in the northwest of Chonking on the 16th and travelled towards ENE on the 17th, reaching Kiukiang at the noon time. On the 18th it entered the Eastern Sea, and after crossing the southern Kiūshū, entered the Pacific. Early on the morning of the 20th it was seen at sea off Kii. L. B. 750 mm.

VI. *Depression of the 20th to the 22nd.*—appeared in the neighbouring sea of the Yayeyama Islands at 10 p.m. of the 20th and travelled northeastwards On the 22nd it disappeared in the northern part of Kiūshū on the 22nd. L. B. 756 mm.

VII. *Depression of the 22nd to the 23rd*—appeared on the sea off the Kii coast at 2 p.m. of the 22nd. Travelling northeastwards it passed away to the south of Hachijojima on the 23rd. L. B. 754 mm.

VIII. *Depression of the 25th to the 27th.*—appeared in the neighbourhood of Chonking at 4 p.m. of the 23rd, and passing Shanghai entered the Yellow Sea on the evening of the 24th. Then making its way through the Korean strait it appeared in the Japan Sea on the 26th, and finally it travelled towards Karafuto. According to the report of the Zikawei Observatory, the baron eter fell as low as 746 mm. at 4 p.m. of the 23rd at Chonking. L. B. 755 mm.

IX. *Depression of the 25th to the 27th.*—appeared at the neighbouring sea of the southeastern part of Kiūshū on the afternoon of the 26th. On the 27th it passed over the sea off Kii on the 27th. L. B. 757 mm.

May.—

I. *Continental depression of the 3rd to the 5th.*—developed in the lower valley of the Yangtsekiang and entered the Eastern Sea by passing the region of Shanghai. On the evening of the third it appeared in the south of Quelpart and then travelling along the coast of the Japan Sea it reached the sea off Naoetsu on the 5th, where it disappeared finally. L. B. 750 mm.

II. *Depression of the 4th to the 5th.*—developed on the sea off Shikoku on the 4th and travelled towards the south east, approaching Hachijojima on the 5th. L. B. 749 mm.

III. *Depression of the 9th to the 11th.*—appeared in the WSW of Chonking on

the 6th and moved slowly eastwards. On the afternoon of the 9th it entered the Eastern Sea and in the evening came as far as the neighbouring sea of Kiūshū. On the 10th the depression was travelling eastwards along the Pacific coast. L. B. 747 mm.

IV. *Continental depression of the 17th to the 18th.*—was located somewhere between Chonking and Ichang at noon of the 17th. On the morning of the 17th it entered the southern part of the Yellow Sea and then moved northeastwards. Traversing the southern portion of Korea it entered the Japan Sea, finally disappearing towards Saghalien. This cyclone caused a stormy weather along the coast of the Japan Sea. L. B. 752 mm.

V. *Secondary depression of the 18th to the 19th.*—developed northwest of Kofu on the moving of the 18th and came to the boundary of Sagami and Kai at 10 p.m. Early on the morning of the 19th it passed east of Hachijojima. As this secondary depression well developed, it caused a storm on the southeastern coast of the Pacific. L. B. 753 mm.

VI. *Secondary depression of the 19th.*—originated in the west of Kōfu and with its course east it passed away into the Pacific. L. B. 753 mm.

VII. *Secondary depression of the 20th to the 21st.*—developed near Kofu and moved northeastwards on the forenoon of the 20th.—In the evening it passed over the sea off Kinkazan, and crossing the eastern part of Hokkaido entered the Okhotsk Sea. L. B. 750 mm.

VIII. *Continental depression of the 21st to the 22nd.*—appears to have come from the Yangtsekiang valley, but it was no certain. Early on the morning of the 21st the cyclone appeared near Quelpart island and came as near as Iki channel where, however, it changed its course to the southeast. Early on the 22nd it passed the Bungo Strait and entered Shikoku. L. B. 754 mm.

IX. *Depression of the 23rd to the 25th.*—According to the Zikawei Observatory the cyclonic depression was lying between lat. 11°N and 13°N on the 15th, and then it traversed the China Sea, thus reaching west of Luzon. It changed its course to the north and passed south of Formosa on the 20th and south of Riūkiū on the 21st. The depression was first discovered on the weather map of the 21st, but it became conspicuous as it came east of Okinawa early on the morning of the 23rd. It travelled along the Pacific coast and finally entered the Okhotsk Sea. L. B. 744 mm.

X. *Secondary depression of the 23rd to the 24th.*—developed on the sea north of Hamada and moved northeastwards, finally entering the northern part of the Japan Sea. L. B. 749 mm.

June.—

I. *Depression of the first to the 3rd.*—appeared north of the islands of Yaye-yama and moved northeastwards on the first. On the morning of the 2nd it came near the western coast of Kiūshū which it traversed, and on the 3rd it passed over the Inland Sea, finally disappearing in the region of Nara at 3 p.m. on the same day. L. B. 748 mm.

II. *Typhoon of the 2nd to the 3rd.*—appeared at the sea in ESE of Luzon on the 29th of May and made its way towards Riūkiū on the 30th. It was located on the 31st in the neighbourhood of lat. 16° N and long. 128 E, from where it moved northeastward. Early on the morning of the 2nd the typhoon appeared far south of Okinawa Island and the 3rd passed near Hachijo Island. This depression caused a storm along the southeast coast. L. B. 749 mm.

III. *Depression of the 7th to the 8th.*—appeared in the northern part of the Formosa channel early on the morning of the 6th and travelled towards the north east, along the Pacific coast. On the night of the 7th it was found as travelling over the Boso peninsula and on the evening of the 8th it passed the sea off Nemuro. L. B. 748 mm.

IV. *Continental depression of the 9th to the 10th.*—appeared in the northern part of the Japan Sea on the afternoon of the 9th and moving southeastwards it traversed Hokkaido and passed away into the Pacific on the morning of the 10th. L. B. 751 mm.

V. *Secondary depression of the 10th.*—developed near Kofu on the 10th and moved towards SSW, passing near Miyakejima in the evening. L. B. 751 mm.

VI. *Depression of the 12th to the 15th.*—appeared south of Formosa on the 11th. Passing northeast of the island it entered the Eastern Sea on the 12th, and then travelled northeastwards along the chain of Riūkiū, entering the Pacific on the 14th. On the 15th the depression passed south of Hachijo-jima. L. B. 748 mm.

VII. *Secondary depression of the 14th to the 16th.*—developed in the bay of Wakasa early on the 14th and made its way northeastwards. On the early morning of the next day it passed north of Sado and finally crossing the northeastern Japan passed into the Pacific. L. B. 747 mm.

VIII. *Continental depression of the 15th to the 16th.*—was found in the northern part of the Japan sea on the afternoon of the 15th. Travelling southeast-wards it came to the Pacific. L. B. 748 mm.

IX. *Continental depression of the 20th to the 23rd.*—appeared in the upper Yangtsekiang valley. Moving eastwards it crossed the Eastern Sea on the 20th, and then on the 21st passing through the Tsushima Strait it entered the Japan Sea. On the 23rd it passed away towards the Okhotsk Sea.

L. B. 746 mm.

X *Depression of the 21st to the 22nd.*—came from the sea off the southern Pacific coast on the 21st, and passed south of the Kii peninsula early on the morning of the 22nd. In the afternoon it passed away into the Pacific. This depression caused a storm along the coast of Tokaido.

L. B. 746 mm.

XI. *Depression of the 26th to the 27th.*—where this depression originated could not be known, but it appears to have come from South China. On the 26th it appeared south of Quelpart island, and travelled through the Tsushima Strait towards the Japan Sea, then disappearing in the north eastern part of Honshū in the evening. L. B. 755 mm.

XII. *Secondary depression of the 27th.*—developed near Kōfu on the morning of the 27th and travelled towards ENE. In the evening it passed over Lake Kasumigaura towards Kashimanada. L. B. 757 mm

XIII. *Depression of the 27th to the 29th.*—came from Foochow on the 27th and moving northeastwards, entered the Eastern Sea. Early on the 28th it passed through the Iki channel into the Japan, and travelling along the coast it disappeared off Akita on the evening of the 29th.

L. B. 751 mm.

XIV. *Secondary depression of the 29th.*—developed near Kofu on the morning of the 29th and moving southeastward disappeared on the sea off Boshu.

L. B. 754 mm.

XV. *Depression of the 29th to the 1st of July.*—came from the Southern China and passed into the Eastern Sea on the 29th. On the next day it reached the northern part of Kiūshū and then passing the south part of Shikoku and Kii appeared in the neighbourhood of Miyakejima, moving eastwards.

L. B. 750 mm.

XVI. *Depression of the 30th to the 2nd of July.*—appeared near the island of Goto on the afternoon of the 30th and passed through the Inland Sea and Honshū moving northeastwards on the 1st of July. In the evening it passed east of Miyako Bay and on the morning of the 2nd, off Nemuro.

L. B. 750 mm.

July.—

I. *Depression of the 6th.*—appeared north of Wakasa Bay early on the morning of the 6th and moving northeastwards, finally disappeared near Akita.
L. B. 750 mm.

II. *Continental depression of the 7th to the 8th.*—appeared in the lower Yangtse-kiang valley on the 6th and entered the Eastern Sea, passing Shanghai on the afternoon of the 7th. On the morning of the 8th the depression passed near the islands of Goto, and then making its way towards the east it passed near Miyakejima. L. B. 749 mm.

III. *Depression of the 10th to the 13th.*—appeared first in South China on the 10th, but travelling northeastwards traversed the southern part of Korea and the Japan Sea. On the night of the 12th the depression passed through Tsugaru Strait and appeared in the Pacific. As this was passing, Hokkaido and the Tsugaru region had a stormy weather.
L. B. 750 mm.

IV. *Depression of the 13th of the 14th.*—the birth place of this depression was not known, but it appeared east of Quelpart island, and moved eastwards, passing over the Inland Sea and the Kii peninsula. On the evening of the 14th the depression passed away into the neighbouring seas of Izu.
L. B. 752 mm.

V. *Depression of the 15th.*—appeared in the northwestern part of Kiūshū on the 15th and then traversed Shikoku and the Kii peninsula. It appeared in the neighbouring seas of Hachijo island in the evening of the same day.
L. B. 750 mm.

VI. *Depression of the 16th to the 18th.*—came from the Korean Strait on the 16th with its course northeastwards. On the 17th the depression passed through the Japan Sea, on the 18th through the Oshima peninsula in SW Hokkaido, and passed into the Pacific. L. B. 750 mm.

VII. *Secondary depression of the 19th.*—developed in the neighbourhood of Kofu and moved southeastwards on the 19th, passing away into the Pacific.
L. B. 753 mm.

VIII. *Secondary depression of the 20th.*—appeared near Saseho, in Kiūshū, and moving northeastwards disappeared in the neighbourhood of Sakai.
L. B. 752 mm.

IX. *Depression of the 20th to the 21st.*—appeared near Tsushima in the evening of the 20th and travelled southeastwards On the morning of the 21st it passing by Shikoku into the Pacific. L. B. 753 mm

X. *Secondary depression of the 31st.*—appeared west of Kofu on the morning of the 31st and making its way eastwards it disappeared near Tokyo at 10 p.m.
L. B. 757 mm.

August.—

I. *Typhoon of the 1st to the 3rd.*—developed near the group of the Mariana Islands late in July, and making its way northwestwards, passed east of the islands of Yayeyama on the 2nd. On the morning of the next day the depression entered China from north of Shanshawan, and on the fourth travelled northwards, passing east of Kiukiang and west of Tientsin, and finally reached the district of Lake Baikal on the 7th. The typhoon caused a violent storm in Riūkiū and Formosa and also heavy damage. The detailed description will be given later. L. B. 723 mm.

II. *Continental depression of the 16th.*—appeared in the northern part of the Japan Sea on the morning of the 16th and moved eastwards, finally entering the sea of Okhotsk L. B. 748 mm.

III. *Secondary depression of the 17th.*—appeared near Kōfu on the morning of the 17th and moved towards ESE. At 10 p.m. it passed Tokyo.
L. B. 755 mm.

IV. *Depression of the 18th to the 20th.*—The origin of this depression was not known. On the evening of the 18th it appeared on the west coast of Korea and travelled northeastwards. The depression traversed the Japan Sea towards Karafuto. L. B. 752 mm.

V. *Typhoon of the 22nd to the 24th.*—According to the report of the Manila Observatory, this typhoon appeared on the sea off the northern extremity of Luzon on the 19th, and at first travelled northwestwards. At 2 p.m. of the 22nd the typhoon was located far off in the southeast of the Yayeyama islands, and came near the islands at the dawn of the 23rd thence making its way westwards. On the morning of the 24th it passed north of Formosa disappeared entering South China from FooChoo. This typhoon caused a severe storm in Formosa, and the islands of Yayeyama and Miyako and more or less damage. The following extract from the report of Ishigaki-jima Meteorological Station is given.

Date	Hour	Barometer	Temperature	Wind direct	Wind vel.	Weather
23rd	1 a.m.	750.3 mm.	26.°6 C	NW	8.3 m.p.s.	rainy
,,	2	749.6	26.6	N	8.0	,,
,,	3	749.2	26.4	N	9.2	,,

,,	4	748.3	25.8	NW	10.7	slightly rainy
,,	5	747.6	25.9	NW	12.2	,,
,,	6	747.3	26.2	NW	14.3	rainy
,,	7	747.1	26.2	NW	14.8	,,
,,	8	747.0	26.0	NW	19.3	,,
,,	9	747.0	26.2	WNW	16.0	,,
,,	10	746.8	26.4	WNW	18.2	,,
,,	11	746.7	25.8	WNW	2.57	,,
,,	Noon	746.9	25.2	NW	22.4	,,
,,	1 p.m.	746.8	25.4	WNW	18.4	,,
,,	2	746.8	26.6	W	18.7	slightly rainy
,,	3	747.0	27.0	W	19.0	,,
,,	4	747.4	27.2	W	14.3	cloudy
,,	5	747.5	27.0	W	13.9	,,

L. B. 745 mm.

September.—

I. *Secondary depression of the 4th.*—developed near Nagano on the 4th and travelled southeastwards. At 10 p.m. it passed away into the Pacific.

L. B. 754 mm.

II. *Typhoon of the 7th to the 9th.*—The birth place of this typhoon could not be known, but considering the nature of its track it appears to have come from the sea northeast of the Mariana Islands. The centre of this typhoon came as far as southeast of the islands of Ogasawara on the morning of the 7th. Making its way northwestwards came near Hachijojima at 6 p.m. and appeared in the sea of Bōshū later in the evening. The next day the typhoon travelled along the Pacific coast and touched Nemuro, and on the 9th it passed away south of the Kuriles. The following extract from the report of the Ogasawara meteorological station (Bonin) is given: —

Date	Hour	Barometer	Temperature	Wind direct	Wind force
6th	10 a.m.	751.4 mm.	29.°3 C	NNW	3
,,	2 p.m.	750.1	30.0	NNW	3
,,	6	750.0	28.0	—	...
,,	10	750.2	27.3	—	—
7th	2 a.m.	749.1	26.6	—	—
,,	6	748.9	27.6	—	—
,,	10	748.7	29.7	NW	3
,,	2 p.m.	748.2	30.5	WNW	3
,,	6	748.1	—	—	—
,,	10	749.1	—	—	—

In Hachijojima the wind was NE and the rain was slight on the morning of the 7th. At 2 p.m., however, the wind direction changed to the east and the wind velocity became great. On the next morning the weather became calm. At Nemuro station the barometer fell rapidly on the afternoon of the 8th. At 2 a.m. of the 9th the lowest barometer reading was 744.4 and the wind velocity which was the highest was 19.9 metres per second. L. B. 744 mm.

III. *Secondary depression of the 8th.*—developed near Kofu on the morning of the 8th and moving eastwards passed away into the Pacific in the evening. L. B. 748 mm.

IV. *Secondary depression of the 15th.*—appeared at the foot of Mt. Fuji on the morning of the 15th and moved towards the southeast. In the evening it was located in Sagaminada. L. B. 754 mm.

V. *Typhoon of the 16th to the 21st.*—appeared far east of Luzon, with its course northwestwards on the 12th. On the 15th typhoon came to the ENE of the island of Luzon, on the 16th to the sea southeast of the islands of Yayeyama, and on the 17th to the west of Ishigakijima. Early on the morning of the 18th changed its course to the northeast at lat. 26° N, and on the 20th entered the Japan Sea by passing through the Strait of Korea. On the 21st the typhoon traversed Hokkaido and entered the sea of Okhotsk. The detailed descriptions will be given later. L. B. 735 mm.

VI. *Depression of the 24th to the 25th.*—came from Korea to the Japan Sea on the 24th and passed into the Pacific by crossing the northeastern part of Honshū on the 25th. L. B. 751 mm.

VII. *Secondary depression of the 25th.*—appeared near Nagano on the morning of the 25th and travelled southeastwards. At 10 p.m. it was located somewhere between Musashi and Hitachi, and later passed into the Pacific Ocean. L. B. 751. mm.

VIII. *Secondary depression of the 21st.*—appeared near Nagano on the morning of the 21st and moved southeastwards, finally merging off Bōshū. L. B. 751 mm.

October.—

I. *Typhoon of the 4th to the 9th.*—developed near the Caroline Islands on the 25th of the last month and moved towards WNW. On the 3rd of this month it passed north of Manila and then entered the China Sea. At lat. 17° N the typhoon changed its course northeastwards and on the

evening of the 4th it passed south of the southern extremity of Formosa and then entered the Eastern Sea passing through between Ishigakijima and Formosa. On the 7th the typhoon merged into Tosanada by crossing Kiūshū, and on the evening of the 8th touched Shiomisaki when it changed its course northeastwards. It passed over Tokyo and entered Kashima-nada on the afternoon of the 9th. L. B. 739 mm.

II. *Depression of the 8th to the 10th.*—appeared in the central part of the Japan Sea on the night of the 8th and moved northeastward. On the 9th it passed through the strait of Tsugaru into the sea off the south coast of Hokkaido, and then crossing the provinces of Nemuro and Kushiro, passed away into the Kurile Islands. There prevailed a stormy weather in Hokkaido. L. B. 754 mm.

III. *Continental depression of the 12th to the 13th.*—appeared in the middle Yangtsekiang valley on the 9th and passed over the mouth of the river on the 11th. On the 12th it crossed the southern part of Korea and entered the Pacific; on the 13th it entered the Okhotsk Sea through the strait of Soya. There prevailed a stormy weather in Hokkaido on the 13th. L. B. 750 mm

IV. *Secondary depression of the 14th.*—appeared near Kōfu on the morning of the 14th and moved eastwards, finally entering the Pacific. L. B. 754 mm.

V. *Typhoon of the 18th to the 19th.*—appeared on the sea east of Riūkiū and moved eastward. On the 19th it appeared in a position between Hachijo-jima and Ogasawarajima, and in the evening it was located east of Inubo-saki. The following extract from the report of the Ogasawara meteorological station is given.

Date	Hour	Barometer	Temperature	Wind direct	Wind force
18th	10 a.m.	757.2	28.0	SE	gale
„	2 p.m.	755.4	27.7	SE	„
„	6	754.7	26.5		
„	10	754.5	24.9		
19th	2 a.m.	752.8	24.8		
„	6	751.8	25.6		
„	10	751.2	26.8	SW	gale
„	2 p.m.	750.0	26 0	SW	Strong
„	6	748.0	26.7		
„	10	749.9	26.0		
20th	2 a.m.	750.3	24.4		
„	6	752.4	23.6		

In Hachijojima there prevailed a rainy weather after 2 p.m. of the 17th and a strong ENE wind after 7 p.m., changing to a violent storm, which continued to 11 p.m. of the 19th. Along the southeastern coast of Honshū a severe storm continued from the 18th to the 19th. L. B. 745 mm.

VI. *Secondary depression of the 20th.*—appeared near Kōfu on the morning of the 20th and moved on southeastwards. In the evening it appeared near the island of Izu. L. B. 755 mm.

VII *Secondary depression of the 21st.*—appeared near Iida on the morning of the 21st and moved on southeastwards, finally entering the bay of Suruga in evening. L. B. 763 mm.

VIII. *Secondary depression of the 24th.*—developed near Kofu and travelled eastwards. At 10 p.m. it came to the Bay of Tokyo and finally traversing the peninsula of Boso entered the Pacific. L. B. 757 mm.

IX. *Depression of the 27th to the 28th.*—appeared in the sea south of Shiomisaki in Kii and moved northeastwards in the evening of the 27th. The depression then passed north of Hachijojima. It was accompanied by a stormy weather along the southeast coast of Honshū as the depression passed. L. B. 755 mm.

X. *Typhoon of the 28th to the 30th.*—appeared at the sea south of Riūkiū on the 27th and moved on towards NNW. On the morning of the 28th it changed its course northeastwards at the sea south of Okinawajima, on the evening of the 29th appeared south of the extremity of the Kii and on the morning of the 30th passed off the southeast coast of Honshū. L. B. 740 mm.

XI. *Continental depression of the 30th.*—appeared in the northern part of the Japan Sea early on the morning of the 30th and moving on southeastwards, then traversed Hokkaido. On the evening of the 30th passed north of Nemuro into the Pacific. L. B. 754 mm.

November.—

I. *Depression of the 1st to the 2nd.*—appeared in the southern part of the Japan Sea on the morning of the 1st and made its way northeastwards. In the evening it was located off Noto where it changed its course eastwards, and on the morning of the 2nd it passed by the island of Sado. Later crossing the northeastern part of Honshū, this depression entered the Pacific. L. B. 761 mm.

II. *Secondary depression of the 2nd.*—developed near Kofu, and taking its usual course, disappeared into the Pacific. L. B. 761 mm.

III. *Depression of the 4th to the 6th.*—appeared somewhere between the islands of Ogasawara and Okinawa on the evening of the 4th with its course towards NNE, and reached the sea off Shiomisaki on the evening of the 5th, whence its course changed to the northeast. On the morning of the 6th it travelled off the coast the Pacific. L. B. 760 mm.

IV. *Depression of the 11th.*—appeared to have come from the Baikal region, though it was not certain. Early on the morning of the 11th it appeared in the north Japan Sea, with its course towards ENE, and finally traversing the northern end of Hokkaido the depression entered the Pacific. L. B. 757 mm.

V. *Depression of the 10th to the 12th.*—appeared in the southern part of the Japan Sea and travelled northeastwards on the evening of the 10th. On the next day the depression crossed the northeastern Japan, entering the Pacific. L. B. 756 mm.

VI. *Continental depression of the 18th to the 19th*—appeared in the Yangtsekiang valley. On the 18th it was located in the Yellow Sea and traversing Korea entered the Japan Sea. On the afternoon of the 19th the depression crossed Hokkaido and passed away into the Pacific. L. B. 744 mm.

VII. *Secondary depression of the 21st*—developed near Nagano on the morning of the 21st and travelled southeastwards, passing near Tokyo and finally merging from Bōsō into the Pacific. L. B. 757 mm.

VIII. *Secondary depression of the 22nd*—developed somewhere between Mayebashi and Nagano on the morning of the 22nd, and moving southeastward passed into the sea off Boso. L. B. 755 mm.

IX. *Depression of the 23rd to the 25th*—This depression, which appeared in a position between the islands of Ogasawara and Okinawa on the 22nd, moved northeastwards, and approached to the southeast coast on the morning of the 24th. Then the depression travelled northwards along the eastern coast of Honshū and on the morning of the 25th it passed over the sea off Nemuro. This cyclonic depression was shallow in the beginning, but as it moved northwards it developed very rapidly and caused a stormy weather in the northeastern district of Honshū and in Hokkaido. L. B. 735 mm.

X. *Depression of the 24th to the 25th*—appeared in the northern part of the Japan Sea on the 24th and moved eastwards. In the evening it reached the northern extremity of Okujirijima and on the early morning of the 25th it passed over the bay of Funkawan towards the Pacific. L. B. 740 mm.

XI. *Depression of the 28th to the 27th*—appeared in the bay of Wakasa on the afternoon of the 27th and moved on northeastwards. Early on the morning of the 28th it travelled through the neighbourhood of Cape Erimo towards the southern islands of Kurile. This depression was shallow at first, but as it travelled northeastwards it rapidly developed. This is the characteristic of the depression of this kind. L. B. 742 mm.

XII. *Depression of the 27th*—The birth place of this depression was not known, but it appeared to have come from the region of Lake Baikal. Early on the morning of the 27th it appeared in the North Japan Sea, and moving on northeastwards and crossing Hokkaido entered the sea of Okhotsk.
L. B. 746 mm.

December. —

I. *Continental depression of the 1st to the 3rd*—developed near Ichang on the 30th of last month, with its course eastwards. On the morning of the 1st entered the Eastern Sea from the mouth of the Yangtsekiang, reaching the western portion of Kiūshū on the evening of the same day. On the 2nd it travelled eastwards along the Pacific coast, and at 2 p.m. it traversed Kasumigaura. It moved on along the east coast of Honshū towards Hokkaido. L. B. 742 mm.

II. *Secondary depression of the 1st to the 3rd*—developed in a position west of Oita on the evening of the 1st. taking its way towards the northeast it reached Iki early on the morning of the 2nd, and passed through the Tsugaru strait towards the Pacific on the early morning of the 3rd.
L. B. 740 mm.

III. *Continental depression of the 6th to the 7th*—appeared in the middle Hoangho valley on the 4th and moved on towards ENE. At the noon of the 5th the depression passed near Tientsin, and on the morning of the 6th entered the Japan Sea by traversing North Korea. In the evening it appeared far off the northern extremity of Hokkaido, and early on the morning of the 7th entered the sea of Okhotsk by passing through the strait of Soya. This depression caused a severe snow storm in Hokkaido that disturbed communication. L. B. 733 mm.

IV. *Depression of the 16th to the 17th*—Where this depression originated could not be known, but it appeared to have come from Shantung. On the night of the 16th this was located in the central part of the Japan Sea, and on the next morning it crossed the Tsugaru district, appearing in the sea off

Nemuro later on the same day. This depression caused somewhat severe snow storms in Hokkaido and in the Tsugaru district. L. B. 754 mm.

V. *Secondary depression of the 17th*—developed near Kōfu on the morning of the 17th and travelling southeastwards disappeared into the sea off Bōshū in the evening of the 17th. This depression caused a strong northwest wind. L. B. 757 mm.

VI. *Continental depression of the 19th to the 20th*—appeared in the western part of the Japan Sea. On the 20th traversed northern part of Hokkaido and entered the sea of Okhotsk. This depression caused a severe storm in Hokkaido and strong west wind all over Honshū. L. B. 740 mm.

VII. *Secondary depression of the 21st*—developed near Kōfu on the morning of the 20th and moved southeastwards, going away into the neighbouring sea of Bōshū towards the evening. L. B. 758 mm.

VIII. *Secondary depression of the 25th*—developed in the southern part of the Japan Sea with its course toward the north east on the evning of the 24th, and was found in the northern part of the sea on the next morning. Finally the depression crossed the northern part of Hokkaido and entered the Okhotsk Sea. L. B. 739 mm.

IX. *Depression of the 24th to the 26th*—This depression might have better called a typhoon or hurricane which caused severe damage. Its birth place could not be known but on the 20th the depression appeared at the sea south of Riūkiū and moved northwestwards. It was located southwest of the islands of Okinawa whence it travelled northeastwards. On the evening of the 25th the depression came to the south of Shikoku, and early on the morning of the 26th it traversed the bay of Tokyo, passing away to the east. The barometric gradient was very deep, and the lowest barometer near Nemuro was 730.9 mm. Next to this Chōshi had 737.9 mm. As Yokohama was not very far from the centre of the depression, the wind direction there changed suddenly at 3.35 p.m. of the 26th and at the same time the wind velocity rapidly decreased. Since 4.35 p.m. the wind direction changed again and the wind velocity suddenly increased. There was also a thunder storm at 6 p.m. of the 26th. L. B. 730 mm.

X. *Depression of the 28th to the 29th*—developed in the strait of Tsushima on the morning of the 28th. Making its way towards the northeast the depression passed through the strait of Tsugaru in the evening, and early on the next morning it passed away into the Pacific from Nemuro.

L. B. 740 mm.

II. REMARKABLE TYPHOONS.

1. Typhoon of August 1st to 3rd.

This typhoon is one of those violent hurricanes which often visit Japan late in every summer or early in every fall, causing considerable damage in Riukiu and Formosa. The birth place of this typhoon was not known, but it appeared to have come from the Mariana islands. In the last part of July it was found far south of Riukiu, and its centre, taking a northwest course at first, approached to a distance of 150 nautical miles south of Okinawa early on the morning of the 2nd. Then changing its course to WNW, it passed north east of Ishigakijima at the noon of the same day. On the 3rd the typhoon came to north of Formosa, and travelled northwestwards, entering the continent. On the fourth it appeared west of Shanghai and moved on northwards.

As the centre of this typhoon was mostly located on the sea, and partly on the continent from whence no meteorological reports could be obtained, we can not give detailed accounts as to the velocity and depth of the typhoon, but the velocity appears to have been about 15 naut. miles near Ishigakijima and then to have increared to 20 naut. miles or more when the cyclonic centre passed north of Formosa. The barometric reading at the centre appears to have been below 720 mm. When the centre was at a position nearest to Naha, the reading was 739 mm. and the barometic change was so slow, that during 6 p.m. of the 2nd the reading was about the same. These facts show clearly that the centre of the typhoon was far away. At the noon of the same day the barometric reading at Ishigakijima was 723.9 mm., when the centre was nearest, and this was the lowest reading obtained during the passage of this cyclone. At Taihoku the lowest reading was 730,9 mm. recorded at 1 p.m. on the 3rd, and then the barometer rose rapidly.

The velocity of the wind caused by the typhoon was above 20 m.p.s. in general. At Ishigakijima and Taihoku it reached that of a hurricane. At 3 p.m. of the 1st a violent north wind blew and the barometric reading was the lowest at Ishigakijima, but at the same time the direction of the wind changed suddenly from north northwest and then to west, and the velocity was about 30 m.p.s. At 5.20 p.m. of the 2nd the direction of the wind was S.W. and its speed was 47.9 m.p.s. reaching the maximum. After that, the SW or S hurricane continued to blow for several hours and then the force of the wind diminished gradually. At Taikoku, a violent wind, which changed its direction from NW to W, blew from 8 a.m. on the 2nd, and this became a SW hurricane at 2 a.m. of the 3rd. The maximum velocity was 30 m.p.s. which continued for several hours.

The place where there occurred the heaviest rainfall was Taikoku. At 4.p.m. of the 1st rainfall began and at 3 p.m. of the 4th it ceased. The precipitation amounted

to 360 mm. in all. The heaviest rainfall which amounted to 37 mm. per hour occurred about 11p.m. on the 2nd. Next to this, the precipitaion amounting to 217 mm. for three days occurred at Taichu.

Station.	Lowest Barometer (Sea level).	Date and hour.	Greatest wind vel.	Wind direction.	Date and hour.	Duration of gale.	Precipitation.	Maxim.	Date and hour.
	mm.		m.p.s.						
Naha	739.0	2nd (4 a.m.—6 a.m.)	28.4	E	2nd (5 a.m.)	34	139	24.1(1)	2nd (8 a.m.)
Ishigakijima	723.9	2nd (noon)	47.9	SW	2nd (5.20 p.m.)	44	175	20.8(1)	2nd (3 a.m.)
Taihoku	730.9	3rd (1 a.m.)	30.1	SW	3rd (2 a.m.)	23	360	37.6(1)	2nd (11 p.m.)
Taichū	739.1	3rd (6 a.m.)	20.6	SSW	3rd (9 a.m.)	16	217	58.3(4)	2nd (2 a.m.)
Tainan	741.2	3rd (1 a.m.)	204.	SW	3rd (1 a.m.)	14	160	136.7(4)	2nd (10 p.m.)
Taito	734.6	2nd (5 p.m.)	21.7	SSW	2nd (midnight)	9	29	11.5(1)	3rd (3 a.m.)
Koshun	741.8	2nd (5—6 p.m.)	21.6	N	2nd (9 a.m.)	—	11	5.1(1)	2nd (midnight)
Pescadores	740.6	3rd (5 a.m.)	23.3	SW	3rd (midnight)	—	2	—	—

2. Typhoon of September 16th to 21st.

The birth place of the typhoon which caused a remarkable storm all over the country from Riūkiū to Hokkaido is not clearly known ; but it appears to have come from the neighbourhood of the Mariana Islands. At the Manila Observatory the typhoon was first noticed on the 12th when it was in a position far east of Luzon, and it was first recognized on our weather map at 6 a.m. of the 14th. The fall of barometer for the past 8 hours ending at this hour was 0.0 mm at Oita, 0.2 at Kumamoto, 0.5 at Miyazaki, 0.7 at Kagoshima, 0.9 at Satamisaki, 1.4 at Oshima, 1.9 at Naha, 0.9 at Ishigakijima, 0.2 at Taito, 1.4 at Koshun etc. The fall of the barometer at Naha is most rapid : this is the characteristic sign of the typhoon approaching the Riūkiū Islands as often mentioned.

On the morning of the 17th the typhoon came to the south of Miyakojima and caused a violent storm in the Miyako and Yayeyama islands. This typhoon passed west of Ishigakijima and moved northwestwards. At 6 a m. of the 18th when it reached lat. 26°N the direction of the progressive motion changed to the north and at lat. 27°N, to the northeast. On the 19th the typhoon traversed the Eastern Sea and on the morning of the 20th entered the Japan Sea by crossing the strait of Korea.

The observations at the Ishigakijima meteorological station on the 17th are as follows :—

Hour	Barometer	Temperature	Wind direct	Wind vel.	Weather
2 a.m.	754.4	23.2	N	18.6	Heavy rain gale
4	741.4	24.0	,,	19.8	,,
6	738.6	23.6	,,	19.7	,,
8	739.1	25.6	NE	14.6	,,
10	738.8	26.6	NE	7.9	Cloudy
Noon	738.8	27.0	E	3.9	,,
2 p.m.	738.6	27.9	S	5.5	slight rain
4	738.3	26.8	S	10.9	,,
5	737.6	25.6	SW	15.6	Slight rain, gale
6	738.1	25.6	SW	16.5	,,
8	746.1	23.9	SW	42.1	,,

The barometer fell to 737.6 mm. at 2 p.m., and the rain stopped to fall and the sky became cloudy. Since 4 p.m. however, the weather became stormy again, and from this it may be seen that the eye of the storm might be nearing to Ishigakijima at that time. As soon as this typhoon came to the Korean strait it travelled rapidly towards the Japan Sea, and on the 21st it landed on Hokkaido and crossing the island passed away into the island of Kurile.

The velocity and direction of the progressive motion of the typhoon are given in the following table : –

Date	Hour	Position of the centre	Velocity	Direction
16th	2 p.m.	Lat. 20° 00′ N long 128° 30′ E	46.7	NW
,,	10 p.m.	lat. 22° 30′ N long. 125° 50′ E	42.5	,,
17th	6 a.m.	lat. 23° 40′ N long. 124° 30′ E	23.3	,,
,,	2 p.m.	Lat. 24° 40′ N long. 123° 10′ E	8.2	NNW
,,	10 p.m.	lat. 25° 10′ N long. 122° 50′ E	16.4	,,
18th	6 a.m.	lat. 26° 20′ N long. 122° 30′ E	11.5	N
,,	2 p.m.	lat. 27° 00′ N long. 122° 40′ E	6.6	NNE
,,	10 p.m.	lat. 27° 40′ N long. 122° 50′ E	8.2	,,
19th	6 a.m.	lat. 28° 10′ N long. 133° 00′ E	14.3	NE
,,	2 p.m.	lat. 29° 00′ N long. 123° 30′ E	38.5	,,
,,	10 p.m.	lat. 31° 20′ N long. 125° 40′ E	51.6	,,

20th	6 a.m.	lat. 33° 50′ N, long. 128° 30′ E	44.2	,,
,,	2 p.m.	lat. 36° 10′ N, long. 131° 40′ E	54.1	,,
,,	10 p.m.	lat. 39° 00′ N, long. 145° 10′ E	33.6	,,
21st	6 a.m.	lat. 40° 30′ N, long. 137° 30′ E	49.1	,,
,,	2 p.m.	lat. 42° 30′ N, long. 140° 30′ E	57.3	,,
,,	10 p.m.	lat. 40° 30′ N, long. 146° 10′ E		,,

3. Typhoon of October 28th to 30th.

The birth place of this typhoon is not known, but it appears to have came from the Mariana Islands taking its course northeastwards. As this typhoon made no effect on the barometer at the Ogasawara meteorological station (in the Bonins), it is clear that this typhoon did not pass the neighbourhood of the island. At 6 a.m. of the 27th the typhoon was recognized for the first time on our weather map. At this time there prevailed in Riukiu a strong northerly wind and stormy weather; and the centre of the typhoon seemed to be changing its course to the north. On the morning of the 28th the cyclonic centre appeared southwest of the island of Okinawa, and caused a storm all over Riukiu. Especially Okinawajima had a heavy rain.

Observations at the Naha meteorological station on the 28th are given in the following table :—

Hour	Barometer	Temperature	Wind direct	Wind vel.	Weather
2 a.m.	751.4 mm.	24.0 c	N	9.9	slight rain
6	749.1	25.4	NE	13.0	,,
10	747.9	25.3	NE	16.4	heavy rain
Noon	744.7	24.3	,,	18.2	,,
2 p.m.	741.6	24.5	NNE	20.3	,,
4	740.4	21.9	N	35.3	,,
4 : 30	740.0	22.0	N	35.7	,,
5	739.9	21.8	N	36.0	,,
5 : 30	739.9	22.1	N	35.7	,,
6	740.8	21.8	N	40.3	,,
8	742.6	21.4	N	38.9	,,
9	742.1	21.4	N	42.8	,,
10	743.9	22.1	N	27.0	slight rain

At Naha the lowest barometer was 739.9 mm which occurred at 5 : 30 p.m. of the 28th, the wind velocity was the maximum at 8 : 30 p.m. and was 45 m.p.s. The

gale continued to blow from 6 p.m. of the 27th to 7 a.m. of the 29th. At Amami-oshima the barometer did not fell considerably, because the island was out of the track of the typhoon. A barometric reading of 746.7 mm. at 4 a.m. of the 29th was the lowest. The wind velocity, however, was comparatively great and was 30.7 mm. per second at 2 : 30 a.m. on the same day.

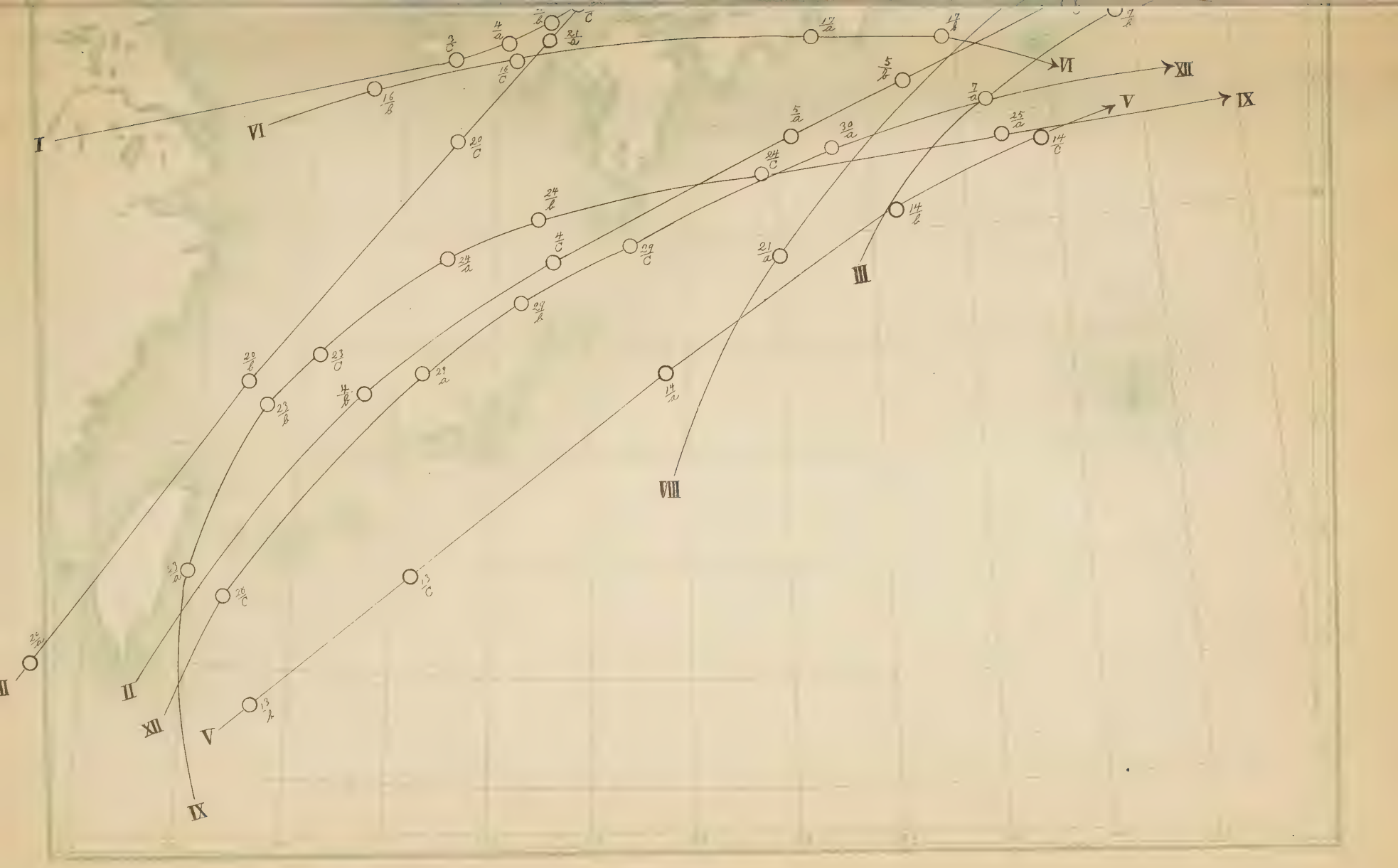
The centre of this typhoon travelled northeastwards along the south side of Riukiu ; and on the evening of the 29th it reached south of Shiomisaki in the province of Kii, and on the next morning, the eastern coast of Honshu, causing a violent northerly wind with rain. But as the velocity of the progressive motion of the typhoon was great, the storm did not last long and damage was not great.

The velocity and direction of the progressive motion of the typhoon are given in the following table :—

Date	Hour	Position of the centre of the typhoon	Direction	Velocity
28th	6 a.m.	Lat. 22° 20′ N, long. 127° 50′ E	NNW	28.7km.p.h.
,,	2 p.m.	lat. 24° 40′ N, long. 128° 00′ E	NE	22.1
,,	10 p m.	lat. 26° 00′ N, long. 129° 00′ E	,,	26.9
29th	6 a.m.	lat. 28° 00′ N, long. 131° 00′ E	,,	21.3
,,	2 p.m.	lat. 29° 10′ N, long. 132° 20′ E	,,	61.4
,,	10 p.m.	lat. 32° 00′ N, long. 136° 20′ E	,,	30.3
30th	6 a.m.	lat. 33° 10′ N, long. 139° 00′	,,	

TRACKS
OF THE
BAROMETRIC DEPRESSIONS.

January, 1901.


I
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XII
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VIII
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XII
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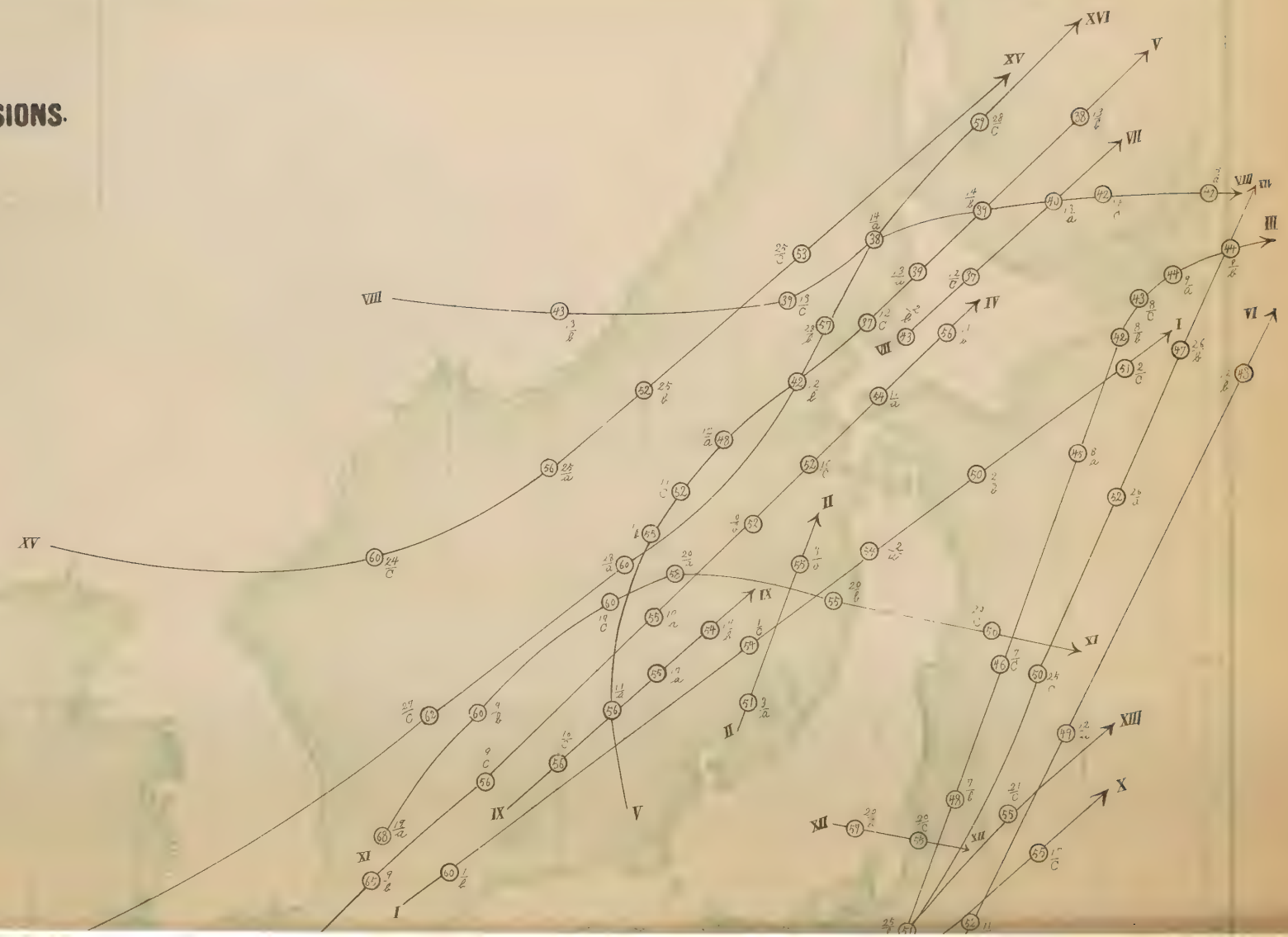
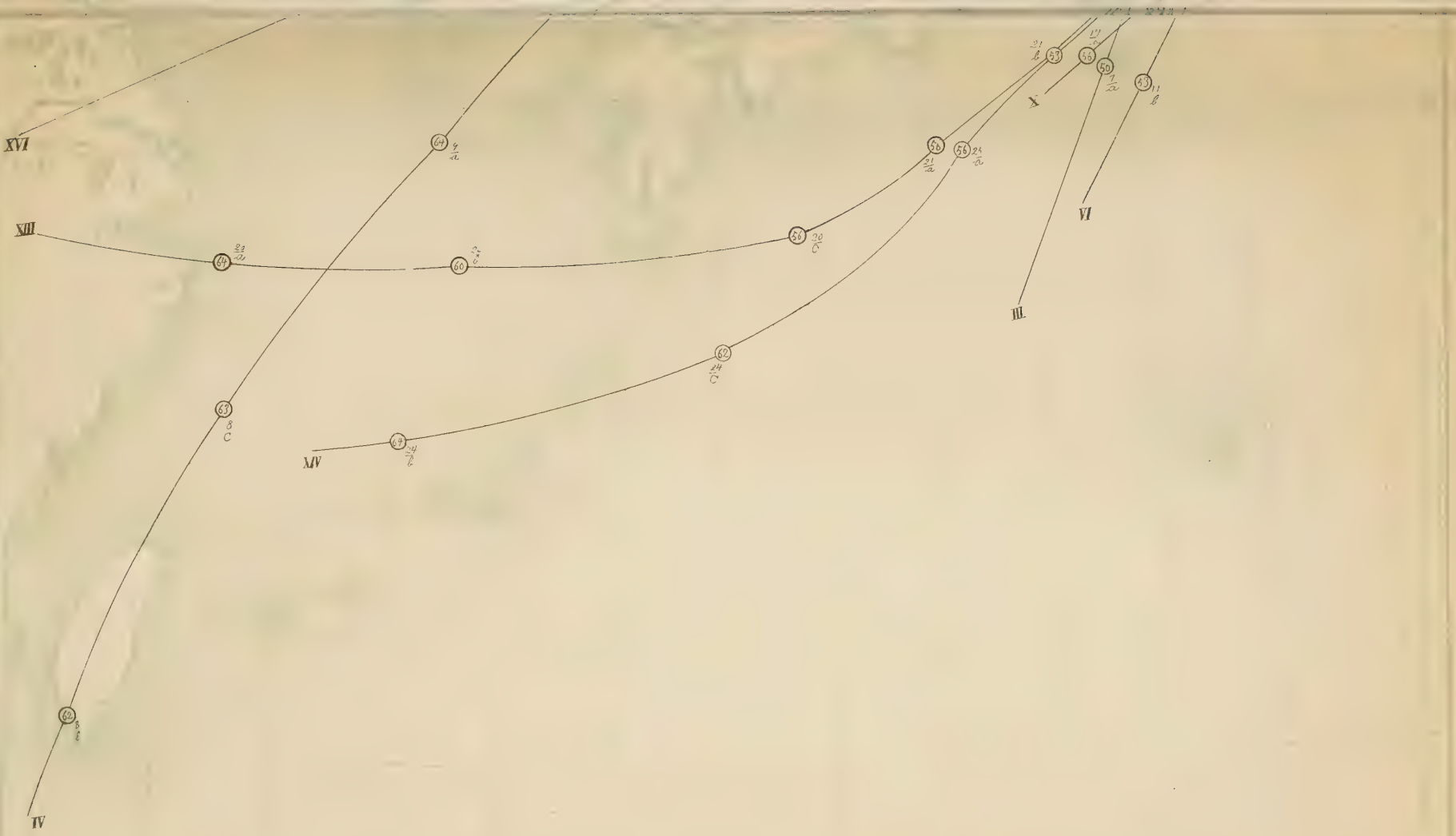
IX

TRACKS
OF THE
BAROMETRIC DEPRESSIONS.

February, 1901.




XVI
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TRACKS
OF THE
BAROMETRIC DEPRESSIONS.

March, 1901.

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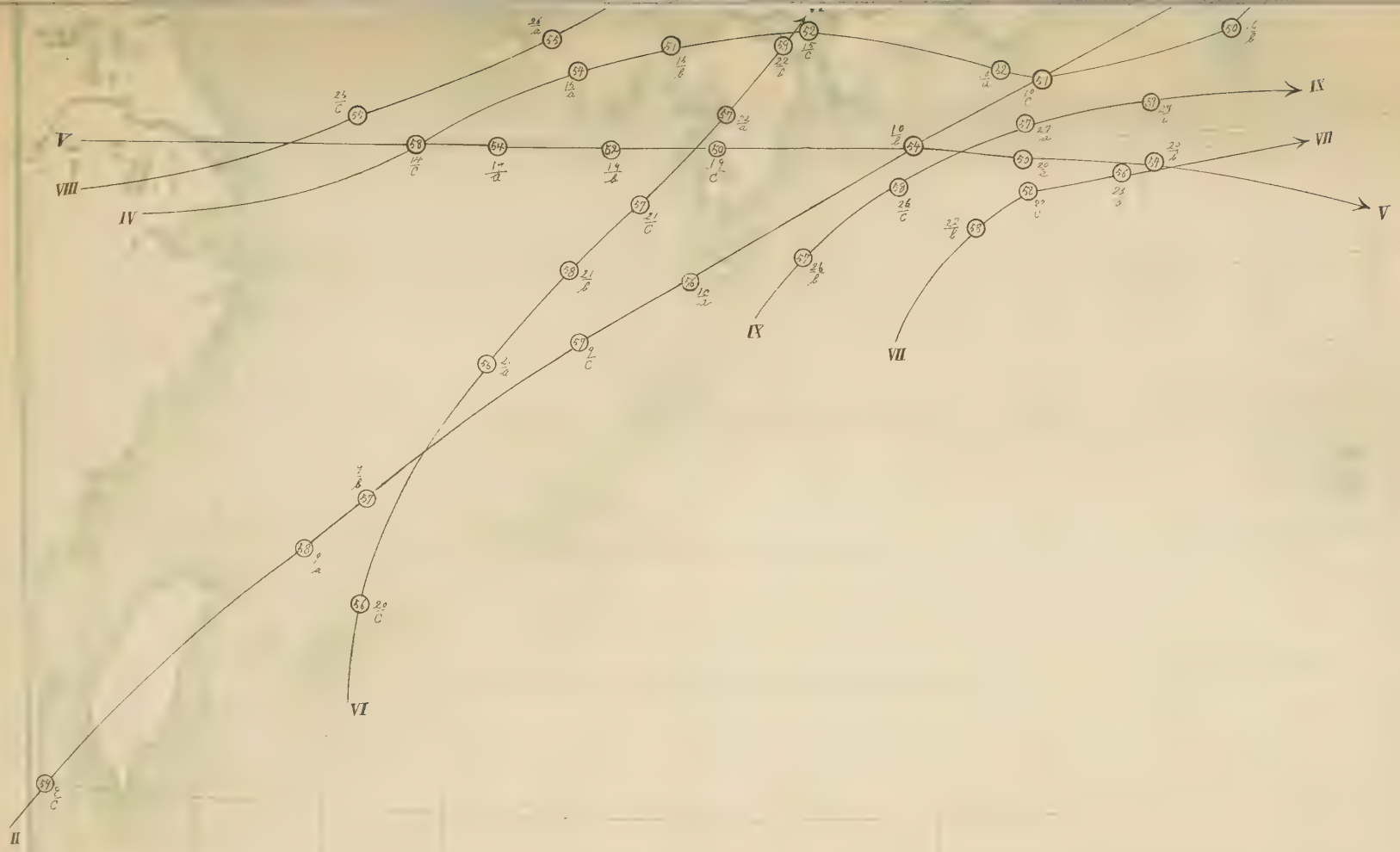
XIII

TRACKS
OF THE
BAROMETRIC DEPRESSIONS.

April, 1901.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VIII
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TRACKS

OF THE

BAROMETRIC DEPRESSIONS.

May, 1901.

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TRACKS
OF THE
BAROMETRIC DEPRESSIONS.

June, 1901.

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XI
XV
XVI
XIII
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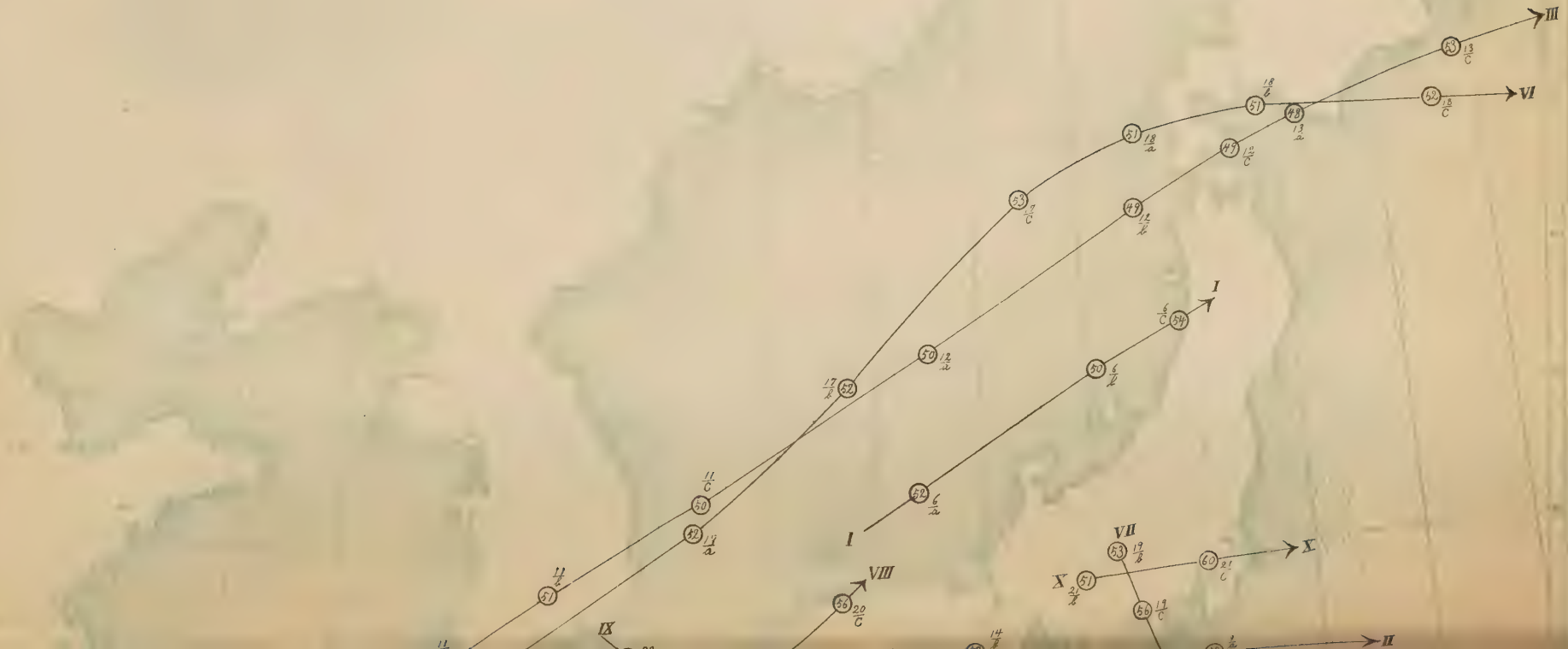
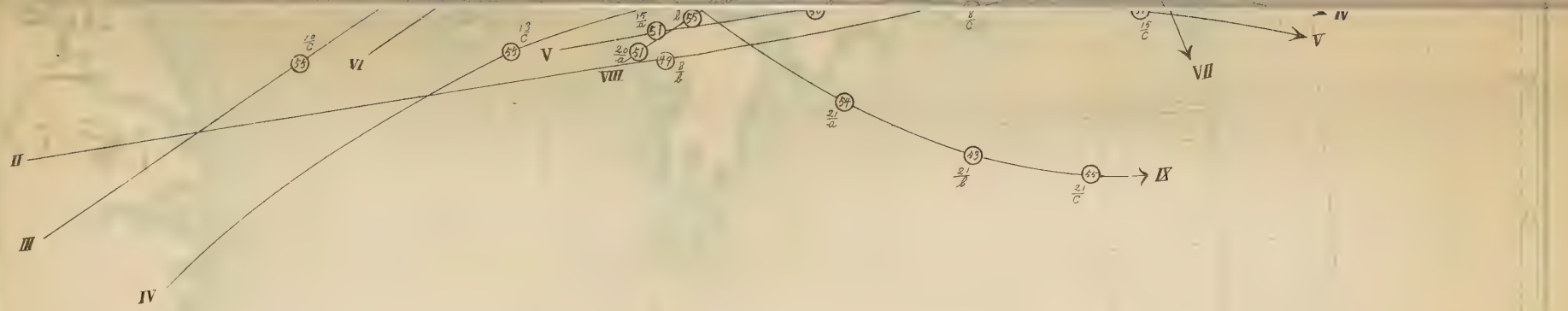
VI

TRACKS
OF THE
BAROMETRIC DEPRESSIONS.

July, 1901.




II
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IX

TRACKS
OF THE
BAROMETRIC DEPRESSIONS.

August, 1901.

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I

TRACKS
OF THE
BAROMETRIC DEPRESSIONS.

September, 1901.

IV
II
V

PL. X.

TRACKS
OF THE
BAROMETRIC DEPRESSIONS.

October, 1901.

I
III
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VI
VII
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X

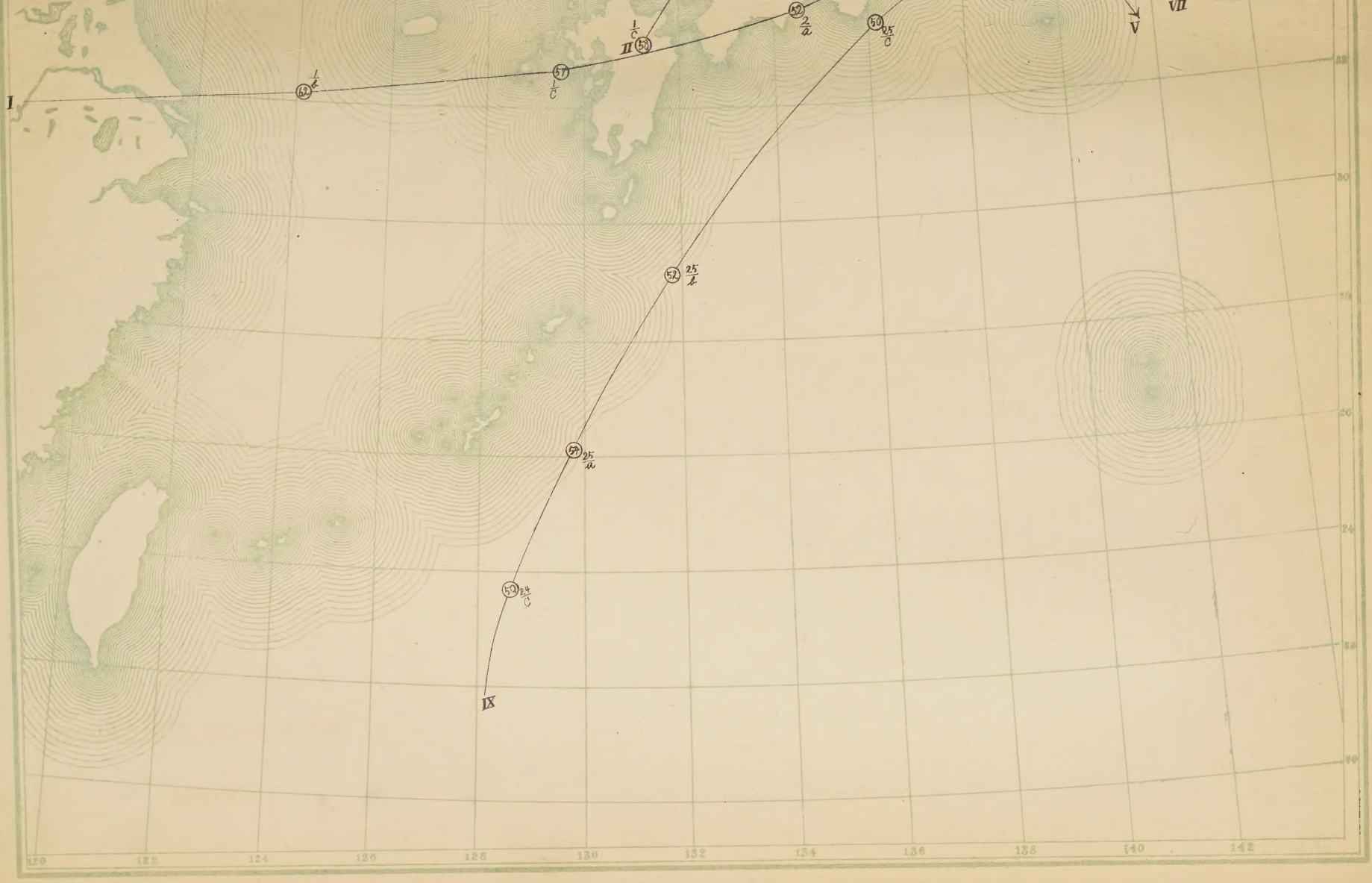
TRACKS
OF THE
BAROMETRIC DEPRESSIONS.

November, 1901.

VI
63 24/A
62 5/C
64 5/A
59 23/C
65 5/A
60 23/B
IX
65 4/C
III

TRACKS
OF THE
BAROMETRIC DEPRESSIONS.

December, 1901.


I
II
V
VII
IX
52 1/f
57 1/c
50 1/c
52 2/a
50 2/c
52 25/f
57 25/a
50 25/c
120
122
124
126
128
130
132
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142